

CLAIMS:

1. A die coating for use on the surface of a mould or die component contacted by molten metal in low pressure or gravity die casting, said die coating including a porous layer of ceramic material produced by co-deposition, using a thermal spraying procedure, of a powder of said ceramic material and a powder of a suitable organic polymer material and, after the co-deposition, heating of said polymer material to cause its removal.
2. A die coating according to claim 1, said ceramic powder being selected from at least one metal compound such as oxides, nitrides, carbides and borides, preferably from the group comprising alumina, titania, silica, stabilised zirconia, silicon nitride, boron nitride, silicon carbide, tungsten carbide, titanium borides and zirconium boride.
3. A die coating according to claim 1, said ceramic powder being selected from at least one mineral compound such as clay minerals, hard rock ore and heavy mineral sands such as those of ilmenite, rutile and/or zircon.
4. A die coating according to claim 3, said ceramics powder being obtained from scoria or pumice.
5. A die coating according to any preceding claim, said organic polymer powder being formed from a thermoplastic material, such as polystyrene, styrene-acrylonitrile, polymethacrylates, polyesters, polyamides, polyamide-imides and PTFE.
6. A die coating according to any preceding claim, each of said ceramic and polymer powders being of relatively narrow size spectrum.
7. A die coating according to claim 6, said ceramic and polymer particles being of particle sizes not more than about 60 μm and not less than about 1 μm in the case of said ceramic powder and not less than about 5 μm in the case of the polymer powder.
8. A process for providing a die coating on the surface of a mould or die component, wherein an initial coating of organic polymer material and ceramic material is formed on the surface by co-deposition of powders of the materials by a thermal spraying procedure, and the initial coating is heated so as to

remove the polymer material and leave a porous coating of the ceramic material.

9. A process according to claim 8, said polymer material being heated for
5 removal by combustion and/or decomposition.

10. A process according to claim 8 or 9, said thermal spraying procedure
being either flame spraying, plasma spraying or electric arc spraying.

10 11. A process according to any one of claims 8 to 10, wherein a
substantially uniform die coat is provided over all surfaces of the mould or die
components, which define a die cavity.

12. A process according to claim 11, said coating having a thickness of
15 from about 250 to 400 μm .

13. A process according to claim 12, said coating having a thickness of
from about 300 to about 400 μm .

20 14. A mould or die component having a surface for contact by molten metal
in low pressure or gravity die casting, said surface being coated fully, or in a
section or sections thereof, by a die coating according to any one of claims 1 to
7.

25 15. A mould or die component having a surface for contact by molten metal
in low pressure or gravity die casting, said surface being coated in a section or
sections thereof with a non-porous ceramic die coating and in another section
or sections thereof, with a die coating according to any one of claims 1 to 7.

30 16. A metal mould or die component having a surface for contact by molten
metal in low pressure or gravity die casting, said surface being coated fully, or in
a section or sections thereof, by alternating layers of a non-porous ceramic die
coating and a die coating according to any one of claims 1 to 7.

17. A die coating material for use in the process of any one of claims 8 to 13, said material being formed from a powder of a ceramic material and a powder of an organic polymer material.